

Cleansing compositions having a pearlescence have gained popularity based on their provision of a luxurious impression in use.

Most commonly used pearlescent agents based on ethylene glycol distearate show good pearlescent appearance due to the formation of plate-like particles in various liquid compositions comprising them.

However, applicant has found that conventional pearlescents can sometimes run into difficulties in providing a pearly appearance, especially at an acidic pH. Commercially available ethylene glycol distearate typically contains a mixture of C₁₆ and C₁₈ components, as the fatty acid moiety, the content being about 50%/50%. Such a mixture of esters (mixture of C₁₆-diester, C_{16/18} ester and C₁₈-diester) is suitable to provide plate-like crystals showing good pearlescent appearance, but has a low resistance to hydrolysis at acidic pH. The result is a decrease in pearlescent appearance. On the other hand, ethylene glycol distearate having a higher purity as to the fatty acid components (a higher C₁₈ content) has a higher resistance to hydrolysis at acidic pH but forms particles which can have poor pearlescent properties because the crystals can be less plate-like. Accordingly, a pearlescent composition which is easy to prepare and is stable at acidic pH is sought.

The claimed invention addresses this problem by providing a method for preparing a cleansing composition in which a molten component (B) based on higher purity ethylene glycol dialkylates (e.g. 70 wt.% or more C₁₈) is deposited on a surface of component (A) based on lower purity ethylene glycol dialkylates (e.g. less than 70 wt. % C₁₈) which is suspended in an aqueous liquid. Such a process or composition is nowhere disclosed nor suggested in the prior art of record.

The rejections of claims 1-20 under 35 U.S.C. §102(a) over Miyajima et al., U.S. 6,417,146, Chen et al U.S. 6,165,955, of claims 3, 4, and 14-19 under U.S.C. §102(a) over

Decoster, U.S. 6,294,160, of claims 1-4, 6-12 and 14-20 under U.S.C. §103(a), over Horiuchi et al U.S. 4,486,334 in view of Decoster, U.S. 6,294,160 are respectfully traversed.

None of the cited prior art of record discloses or suggests a process or cleansing agent in which molten ethylene glycol monoalkylate and/or ethylene glycol dialkylate having fatty acids having carbon atoms of 18 or greater accounting for 70 wt.% or more of the fatty acids (component (B)) is caused to be deposited on a surface of an ethylene glycol monoalkylate and/or ethylene glycol dialkylate in which fatty acids having carbon numbers of 18 or greater account for less than 70 wt.% of the constituent fatty acids (component (A)), which is suspended in an aqueous liquid.

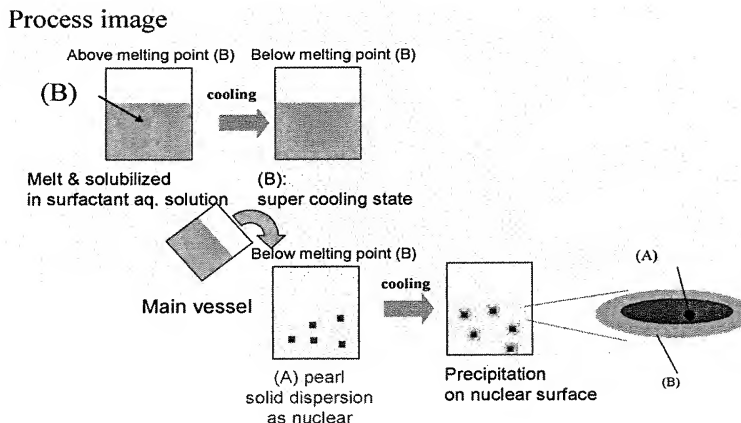
Applicant notes that component (B) having 70 wt. % or more of C₁₈ or greater ethylene glycol dialkylate will have a higher melting point than component (A) having less than 70 wt. % of C₁₈ or greater ethylene glycol dialkylate. The molecular weight of component (B) is greater than that of component (A) by virtue of the greater percentage of fatty acids having carbon numbers of 18 or greater. Since the molecular weight of component (B) is greater than that of component (A), the melting point of component (B) is greater than that of component (A). Such a correlation of molecular weight with melting point is well known to those of ordinary skill in the art and illustrated by the trend in melting points of myristic acid C₁₄ (52-54°C), palmitic acid C₁₆ (61-62°C), stearic acid C₁₈ (67-72°C) arachidic acid C₂₀ (74-76°C), behenic acid C₂₂ (72-80°C)¹ and lignoceric acid C₂₄ (84°C)².

The pearlescent composition prepared according to the claimed process will result in a structure in which the **higher melting point** component (B) is deposited **on the surface** of the **lower melting point** component (A). A suitable process is illustrated below:

¹ All melting points from Aldrich catalog 2005-2006, except for lignoceric acid.

² TCI America on-line catalog.

Coating the surface of (A) by (B)



While a super cooled component (B) is illustrated above, it is also possible to practice the claimed invention by adding molten component (B) to a suspension of component (A).

At the heart of the examiner's rejection is the mistaken belief that mere melt mixing and cooling of a blend of ethylene glycol dialkylates would produce the claimed structure. The claimed structure can not result from the mere melt mixing and cooling for the following reasons.

When a melt mixture of two compounds is cooled, generally the compound with the **higher melting point** will **solidify first**, followed by the lower melting point material. Since the higher melting point material will solidify first, at best, the **lower melting point** material would be deposited **on the surface** of the **higher melting point** compound.

In contrast, the claimed invention is directed to a process and composition resulting from depositing a **higher melting** component (B) **on the surface** of the **lower melting point** component (A). Namely, molten ingredient (B) is deposited on the surface of ingredient (A) which is in a suspended state. These components (A) and (B) are never melt mixed. Thus

the claimed structure does not and can not result from the mere melt mixing and cooling of a ethylene glycol dialkylate mixture as the claimed structure is the opposite of what would typically be formed by cooling a melt mixture of two solids. Even accounting for complex mixed crystal formation, there is no way to deposit the higher melting material on the surface of the lower melting material by simply cooling a melt mixture of two materials.

As the fundamental premise of the examiner's analysis is flawed, it is clear that the claimed invention is neither anticipated nor rendered obvious from the cited references.

The cited references simply do not suggest either the claimed process or the claimed cleansing composition.

Miyajima et al. describes a method in which the ingredients are heated together to 80°C, allowing the ingredients to melt, and then cooling the melt to 30°C with stirring (column 4, line 66 through column 5, line 2). There is no disclosure or suggestion of a method in which molten component (B) is caused to deposit on a surface of component (A). Moreover, such a process would not result in a pearlescence having the same structure as one prepared by deposition molten component (B) on a surface of a suspension of component (A).

Chen et al suffers the same deficiency as Miyajima et al.

Chen et al. has been cited for the disclosures of example 1 and at column 7, lines 23-31 in which all the ingredients are heated until the solution is clear, then allowed to cool. This describes an embodiment in which all of the components are melted (e.g. a clear solution) and therefore, component (B) having a higher melting point will solidify first upon cooling. As component (B) must be the first to solidify, it would not be possible for component (B) to be deposited onto a surface of component (A).

Decoster describes in the example at column 6, a shampoo composition comprising ethylene glycol distearate and dipalmitate. A commercially available composition Tegin BL

315 by Goldschmidt is referenced, however there is no disclosure of a structure in which the higher molecular weight component (B) is on the surface of the lower molecular weight component (A). In addition, there is no disclosure or suggestion of a molten component (B) being deposited on a surface of a suspension component (A).

Horiuchi et al. describes a process in which molecules of solubilized pearlescent agent are confined within the hydrophobic regions of micelles, followed by an *in situ* in crystallization by cooling so that the association state of the micelles is kept substantially unchanged throughout the whole course of crystallization. There is no disclose or suggestion of a molten component (B) being deposited on a surface of component (A). Moreover, such a process would not result in a pearlescence having the same structure as one prepared by deposition molten component (B) on a surface of a suspension of component (A).

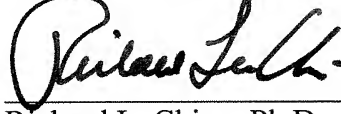
In contrast, the claimed invention is directed to a process for preparing a cleansing composition in which molten component (B) is caused to deposit on a surface of a suspension of component (A). Since none of the cited references disclose or suggest a method in which a higher molecular weight component is on the surface of a lower molecular weight component and the process of cooling a melt of two components will not allow for such a structural relationship, the claimed invention is clearly neither anticipated nor rendered obvious by the cited references and withdrawal of the rejections under 35 U.S.C. §102(a) (b) and 35 U.S.C. §103(a) are respectfully requested.

Applicant submits that this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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